(No Model.)

A. W. STEIGER.

MECHANICAL MOVEMENT.

No. 442,404. Patented Dec. 9, 1890.

Fig. 4.

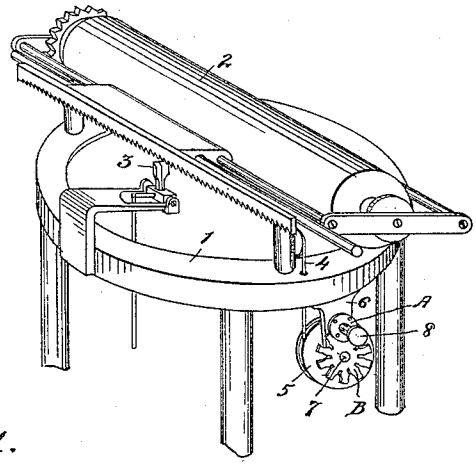


Fig. 1.

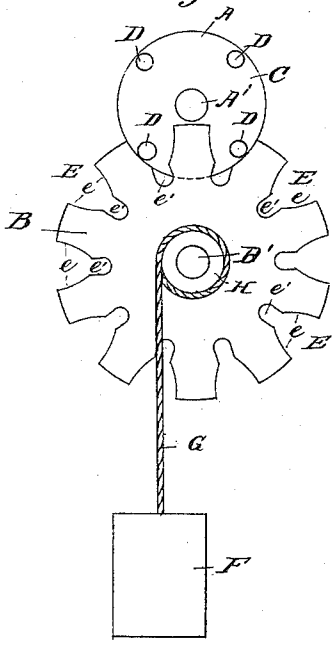


Fig. 5.

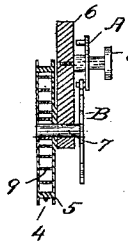


Fig. 3.

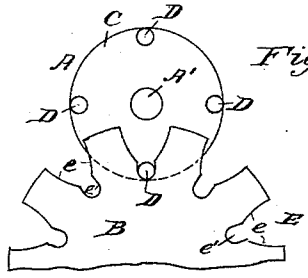
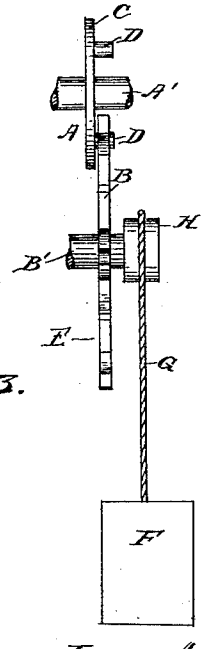


Fig. 2.



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ANDREW W. STEIGER, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR TO THE YOST WRITING MACHINE COMPANY, OF NEW YORK, N. Y.

MECHANICAL MOVEMENT.

SPECIFICATION forming part of Letters Patent No. 442,404, dated December 9, 1890.

Application filed July 11, 1890. Serial No. 358,405. (No model.)

To all whom it may concern:

Be it known that I, ANDREW W. STEIGER, a citizen of the United States, and a resident of Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Mechanical Movements, of which the following is a specification.

My invention in mechanical movements relates especially to gearing or gear-wheels.

It consists, primarily, in constructing and combining a driving and a driven gear-wheel, substantially as hereinafter described, so that the driving-wheel shall be free to be turned in either direction to rotate and apply power to or through the second or driven wheel, while at the same time the said driving-wheel when at rest shall act as a detent or pawl or stop to lock or prevent rotation of the second or driven wheel.

My invention consists, further, in certain features of construction and combinations of devices, all as will be hereinafter more fully described, and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a face view of a pair of gear-wheels constructed in accordance with my invention. Fig. 2 is an edge view of the same. Fig. 3 is a partial face view of the same pair of wheels shown in a different position from that in Fig. 1, a portion of the driven wheel being broken away. Fig. 4 shows a pair of gear-wheels constructed according to my invention applied to wind the spring of the carriage-driving mechanism of a type-writing machine, and Fig. 5 is a central vertical section taken through the gear-wheels and spring driving-drum at Fig. 4.

Similar letters and figures of reference apply to corresponding parts in the several figures of the drawings.

A is the driving-wheel, and B the driven wheel, and these two wheels are mounted, respectively, on the axles or shafts A′ and B′.

The driving-wheel A is preferably formed, for reasons hereinafter set forth, of a circular plate C, with laterally-projecting studs, cogs, or pins D, set at a properly-determined distance apart and at an equal radial distance from the center of motion of the wheel. The driven wheel B is also preferably made of a circular plate which is notched or recessed at its periphery, as shown at E E, and these notches are so shaped or outlined as to form two distinct portions—namely, a locking portion *e* and a gearing portion *e′*.

In order that the studs or pins D of the driving-wheel A may mesh into and effectually co-operate with the notches in the driven wheel B, the two wheels A and B are so mounted as to lap past or partly overlie each other.

The studs D in the wheel A are so spaced and the notches E in the wheel B are so formed and divided into the two parts *e* and *e′* as that during the rotation of the wheel A as one stud D passes in through the portion *e* of a notch in the wheel B another stud will move out through the portion *e* of an adjacent notch, and the sides of these portions *e* of the notches E are made circular with a radius equal to the radial distance of the outer face of the studs D from the center of motion of the wheel A and with a center coincident with the center of said wheel A when the above-described movement is taking place. When a stud D, through the rotation of the wheel A, has reached the bottom of the part *e* of the notch, the preceding stud will have reached the outer edge of the adjacent preceding notch, and the first-named stud may enter the gear portion *e′* of the notch E and drive or rotate the wheel B about its axis B′ until by the rotation of the wheel A another of the studs D is brought into position to enter another notch E on the wheel B, and this will take place when the first-mentioned stud has reached a point where it is about to pass out of the gear portion *e′* of its notch and into the locking part *e* thereof. By reason of the circular sides of the locking portions *e* of the notches E being concentric with the driving-wheel A, the movements of the studs D through these parts will produce no motion in the wheel B; but as soon as the entering stud has passed through its corresponding locking portion *e* and enters the gear portion *e′* of the notch E a continued motion of the wheel A will cause the stud to act as a tooth or cog to turn the wheel B.

From the above it will be readily understood

that if a reacting power be applied to the wheel B with a tendency to rotate it in either direction while the studs D are in the locking portions *e* of the notches E there will be no effect produced on the wheel A to rotate it, and the wheel B will be prevented from turning, the studs D and the wheel A acting as a stop or detainer.

In Figs. 1 and 2 I have shown a weight F, attached to a rope or cord G, which passes up over a drum H on the axle B′ of the wheel B. This weight F has a tendency to rotate the wheel B about its axis; but by reason of the detaining action of the stud D and the wheel A the wheel B is held stationary and the weight F sustained. If, however, the two wheels should be left in the relative position shown in Fig. 3 and the weight applied as in Fig. 1, then the wheel B would turn about its axis just far enough to bring the studs D on the wheel A into the portions *e* of their corresponding notches E, and then the said wheel B would be locked, as in Fig. 1.

In Fig. 4, 1 is the top plate of a type-writing machine; 2, a paper-carriage mounted to slide thereon; 3, an escapement to give a step-by-step movement to the carriage, which is drawn along by a cord 4 attached thereto at one end, the other end of the cord being attached to a spring-actuated drum 5, mounted on a bracket 6, fixed to the frame of the machine.

On the end of a spring-winding arbor 7, projecting outwardly through the bracket 6, is mounted a notched wheel B, corresponding with the driven wheel shown in Fig. 1, and above it on a stud projecting from the bracket 6 is mounted a gear-wheel A, corresponding with the driving-wheel at Fig. 1. A thumb-wheel 8 is preferably attached to the wheel A, so that it may be easily rotated to act on the wheel B and cause the latter to wind or unwind the spring 9 in the drum 5 to increase or diminish the tension on the cord 4, and hence the feed of the carriage.

By my invention no independent detent or pawl is necessary, as the wheels will lock themselves immediately on removal of the force or power applied to the driving-wheel. This, it will be understood, is a great desideratum, as is that of being able to turn the driven wheel in either direction.

My invention may be used in clocks, hoisting and lowering apparatus, and in other machinery than type-writers.

The locking portions *e*, which are concentric with the axis of the wheel A, it will be observed, are elongated or extended for the purpose of preventing any one of the cogs D from being thrown past the locking portions by the momentum or throw of the wheel A in case the latter should be released while the preceding cog D is in the gearing portion *e′*. It will be further observed that by the employment of the elongated concentric locking portions *e*, leading into or communicating with the gearing portions *e′*, the wheel B and its load are moved intermittently when the wheel A is turned constantly.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination of a driving-wheel having laterally-projecting studs or cogs and an overlapping driven wheel provided with a series of gearing portions *e′* and with a series of extended or elongated locking portions *e*, arranged above or beyond the gearing portions and communicating therewith, and formed or constructed with faces concentric with the driving-wheel, whereby the constantly-driven studs or cogs may pass from the locking portions into the gearing portions and intermittently turn said driven wheel, as well as lock or check its rotation upon the removal of the power from the driving-wheel, substantially as set forth.

2. The combination of a step-by-step sliding carriage, a pulling-band, a spring-actuated drum, a wheel connected to said drum and having notches or recesses formed with locking and gearing portions, and a wheel having studs or cogs adapted to engage with said locking and gearing portions of the notched wheel.

Signed at New York city, in the county of New York and State of New York, this 8th day of July, A. D. 1890.

ANDREW W. STEIGER.

Witnesses:
JACOB FELBEL,
M. E. LEES.